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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,884	02/21/2002	Robert Hatzl	22123	9947

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EXAMINER

BLACKNER, HENRY A

ART UNIT	PAPER NUMBER
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3641

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/081,884

Applicant(s)

HATZL ET AL.

Examiner

Henry A. Blackner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-10 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Austria on 23 February 2001. It is noted, however, that applicant has not filed a certified copy of the A296/2001 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

1. Austrian Patent No. AT 405 591 B, page 3 line 7.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 6', page 9 line 21.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, claims 3 and 10 "*further comprising a thin electrically insulating layer between said initiator bridge and said reactive layer*", must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: The term “*glowing bridge*”, page 2 lines 3 and 15 and page 5 line 25, was previously identified as “*ignition bridge*”.

Appropriate correction is required.

Claim Objections

Claims 1-3 and 7-10 are objected to because of the following informalities:

1. The term “*initiator bridge*”, claim 1 line 3, claim 2 line 2, claim 3 line 3, and claim 10 line 3, was previously identified as an “*electrically energizable initiator bridge*”.
2. The term “*bridge*”, claim 1 lines 4 and 7, claim 7 line 2, claim 8 line 3, claim 9 line 2, and claim 14 lines 5, 8, 12, and 14, was previously identified as an “*electrically energizable initiator bridge*”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrases “*a less noble metal*”, line 1, and “*a more noble metal*”, line 4, are vague and indefinite, since it is unclear as to what constitutes the difference between a *less noble*

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and *more* noble metal. Accordingly, the claim cannot be further examined on the merits, since the intended scope and structure recited in the claim are so unclear that it is not possible to make a comparison with the prior art.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrases "*a more noble metal*", line 2, and "*a less noble metal*", line 3, are vague and indefinite, since it is unclear as to what constitutes the difference between a *less* noble and *more* noble metal. Accordingly, the claim cannot be further examined on the merits, since the intended scope and structure recited in the claim are so unclear that it is not possible to make a comparison with the prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 10, and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 5,847,309 to Baginski.

Baginski clearly illustrates claim 1, a pyrotechnic initiator (50), which is comprised of a silicon wafer (52) with thin layers of silicon dioxide (53), on the front and back surfaces of the silicon wafer, which provide electrical insulation, an electrically energizable initiator bridge (54₃), and a reactive layer (58), which is comprised of a combustible metal, zirconium, and is situated over the electrically energizable initiator bridge, in the form of a rectangular steak, for

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the liberation of energy upon electrical energization of the electrically energizable initiator bridge, in figures 5(A) and 5(B) and column 6 lines 36-65, column 7 lines 1-29, column 8 lines 23-44, lines 57-58, and lines 63-66, column 9 lines 57-67, and column 10 lines 1-11.

In regards to claims 2, 3, 10, and 12, see rejection of corresponding parts of claim 1, above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baginski in view of Cummings.

In regards to claim 7, Baginski discloses the claimed invention except for illustrating that the reactive layer is comprised of nickel. Cummings teaches in column 5 lines 51-60 and claim 1 lines 12-17 and lines 20-30, that a mixture of reactive materials in an igniter, undergoes an

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exothermic reaction of the type $AB + C = AC + B$. The reactions are typified by the “Goldschmidt” reaction, wherein a stable metal oxide is mixed with a metal. In the reaction, the second metal replaces the metal in the compound with the liberation of considerable heat, which elevates the reaction products of metal oxide and metal to an elevated temperature.

said igniter comprising:

a frangible tube substantially coaxial with said cylindrical body of fuel;

a mixture of two materials within said tube, said two materials being exothermically reactive together in response to detonation of said high explosive, and

the first of said two materials being selected from the group consisting of lithium, potassium, cesium, barium, calcium, sodium, magnesium, beryllium, aluminum, titanium, zirconium, and carbon;

*the second of said two materials being selected from the group consisting of oxides, halides, carbides, sulfides, borides, nitrides, silicides, and phosphides of the metals magnesium, beryllium, **aluminum**, **titanium**, **zirconium**, manganese, vanadium, zinc, chromium, iron, cadmium, indium, cobalt, **nickel**, molybdenum, tin, lead, copper, and mercury.*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a metal from Cummings’s list of reactive metals in order to achieve the desired effect of developing a pyrotechnic initiator, which does not require the need of a primary explosive.

In regards to claim 8, Baginski discloses the claimed invention except for illustrating that the pyrotechnic initiator further comprises an ignition promotor in a region of the electrically energizable initiator bridge and the reactive layer. Cummings teaches in column 29 lines 34-50, that a solid reactive porous, which is preferably a powdered element of the variety consisting of aluminum, titanium, and zirconium and a powdered compound such as an oxide or a nitride of a metal such as aluminum, titanium, zirconium, and nickel, is subject to a shock wave for

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generating additional energy by exothermic reaction after initiation. The solid reactive porous is preferably substantially more electropositive than a mixture of reactive materials in an igniter, so that a large amount of energy is released by the reaction, and the reaction products are heated to an elevated temperature. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ Cummings's additional reactive material in order to achieve the desired effect of developing a pyrotechnic initiator, which had an increased burn rate.

In regards to claims 9 and 13, see rejection of corresponding parts of claim 7, above.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baginski in view of Willis. Baginski discloses the claimed invention except for illustrating a method that includes the process of sintering the combustible metal of the reactive layer to the electrically energizable initiator bridge. Willis teaches in column 6 lines 22-30, a method comprising the process of sintering, in order to create a layer of platinum silicide. The desired layer is created by depositing a layer of platinum over a layer of silicon, which is then sintered for approximately 30 minutes at 615 degrees centigrade. The remaining pure platinum is etched away leaving only the platinum silicide. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ Willis's method of combining two different metals together in order to produce an alloy that when energized, would allow a pyrotechnic initiator the capability to generate an efficient ignition mechanism.

Allowable Subject Matter

Claims 4-6 and 11 are objected to as being dependent upon a rejected base claim, but may be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents show the state of the art in the field pyrotechnic initiator with an ignition bridge.

U.S. Patent No. 6,386,108 B1 to Brooks et al.

U.S. Patent No. 6,272,965 B1 to Baginski et al.

U.S. Patent No. 6,192,802 B1 to Baginski

U.S. Patent No. 6,105,503 to Baginski

U.S. Patent No. 6,013,144 to Callaway

U.S. Patent No. 5,942,717 to Pathe et al.

U.S. Patent No. 5,370,054 to Reams et al.

U.S. Patent No. 5,337,674 to Harris et al.

U.S. Patent No. 5,285,727 to Reams, Jr. et al.

U.S. Patent No. 4,869,170 to Dahmberg et al.

U.S. Patent No. 4,729,315 to Proffit et al.

U.S. Patent No. 4,152,987 to Lundstrom et al.

U.S. Patent No. 4,106,411 to Borchert et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry A. Blackner whose telephone number is 703-305-4799.

The examiner can normally be reached on 08:45 - 17:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone numbers for the

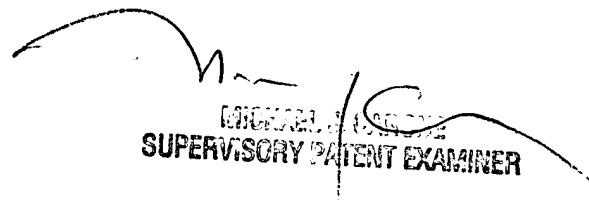
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organization where this application or proceeding is assigned are 703-306-4196 for regular communications and 703-305-3597 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5771.

hab

February 10, 2003


MICHAEL J. SCHOENE
SUPERVISORY PATENT EXAMINER